

The opinion in support of the decision being entered today was *not* written for publication and is *not* binding precedent of the Board.

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

Ex parte ATLE BJORNERUD,
KAREN BRILEY-SAEBO,
MICHAEL V. KNOPP,
STEPHEN MCGILL, and
STEFAN O. SCHOENBERG

Appeal 2006-2266
Application 10/018,026
Technology Center 3700

Decided: May 22, 2007

Before TERRY J. OWENS, MURRIEL E. CRAWFORD, and ANTON W. FETTING, *Administrative Patent Judges*.

CRAWFORD, *Administrative Patent Judge*.

DECISION ON APPEAL

STATEMENT OF THE CASE

This appeal involves claims 24 to 33, the only claims pending in this application. We have jurisdiction over the appeal pursuant to 35 U.S.C. 6(b).

The claims are directed to method of magnetic resonance (“MR”) imaging of a kidney in vascularized human or non human body . Claim 24 is illustrative:

24. A method of magnetic resonance imaging of a kidney in vascularized human or non human body comprising the steps of:

- administering into the vasculature of said body a bolus of a blood pool MR contrast agent;
- generating a contrast enhanced MR image of said kidney during the first pass of said contrast agent;
- generating at least one further MR image of said kidney after the concentration of said contrast agent throughout the blood of said body has become substantially uniform and, deriving from said MR images values indicative of one of renal perfusion and renal artery stenosis grade.

The Examiner relies on the following prior art references to show unpatentability:

Berg

US 5,128,121

Jul. 7, 1992

Mistretta US 6,381,486 B1 Apr. 30, 2002

Fischer US 6,411,837 B1 Jun. 25, 2002

McMurry US 2004/0208827 A1 Oct. 21, 2004

Stark, "Magnetic Resonance Imaging," *Mosby-Year Book*, Vol. 1, pp. 327-328 (1992)

The rejections as presented by the Examiner are as follows:

1. Claims 24, 30 to 33 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Mistretta in view of Stark.
2. Claims 25 to 27 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Mistretta in view of Stark and further in view of Berg.
3. Claim 28 is rejected under 35 U.S.C. § 103(a) as being unpatentable over Mistretta in view of Stark and further in view of Fischer.
4. Claim 29 is rejected under 35 U.S.C. § 103(a) as unpatentable over Mistretta in view of Stark and further in view of McMurray.

Appellants contend that neither Mistretta nor Stark discloses a method of acquiring renal perfusion information of the kidney. Appellants further contend that there is no motivation to combine the teachings of Mistretta and Stark.

ISSUES

The first issue is whether the Appellants have shown that the Examiner erred in finding that the invention would have been obvious in view of the combined teachings of Mistretta and Stark. This issue turns on whether the claims require a method of magnetic imaging of the kidney that includes a step of generating a MR image of the kidney indicative of renal perfusion.

The second issue is whether the Appellants have shown that the Examiner erred in finding that there was a reason to combine the teachings of the applied references.

FINDINGS OF FACT

Appellant's claim 24 recites that the step of generating at least one further MR image of the kidney includes the step of deriving from the MR image values indicative of *one of* renal perfusion and renal artery stenosis grade. Therefore, claim 24 requires that the MR image values obtained be indicative of renal perfusion *or* renal stenosis grade.

Claim 30 recites that the values are indicative of renal perfusion.

Mistretta discloses that diagnosis studies of human vasculature have many applications and that X rays have been used to image the vasculature

of the kidney. However, the use of X rays has certain drawbacks such as subjecting the patient to potentially ionizing radiation and often requiring the use of an invasive catheter (col. 1, ll. 14 to 25). Mistretta further discloses that Magnetic Resonance Imaging (MRI) can be used to obtain images of human vasculature with advantageous results (col. 1, ll. 41 to col. 3, l. 20).

Stark discloses MRI can be used to diagnosis the renal stenosis grade (page 3).

Berg discloses that in MRI, the contrast in the image generated may be enhanced by introducing into the zone being imaged an agent, referred to as a contrast agent (col. 1, ll. 10 to 12). The enhanced contrast obtained with the use of the contrast agent enables particular organs or tissues to be visualized more clearly by increasing or by decreasing the signal level of the particular organ or tissue relative to that of its surroundings (col. 1, ll. 17 to 21). Berg discloses that some materials used as contrast agent achieve this effect because they are superparamagnetic (col. 1, ll. 6 to 30).

Fischer discloses the use of T_2 weighted contrast agents in MRI (col. 6, l. 9 to col. 7, l. 13). Appellants have not argued that Fischer does not disclose the use of T_2 weighted contrast agents.

McMurray discloses the use of T₁ weighted contrast agents in MRI (paragraph 0040). Appellants have not argued that McMurray does not disclose the use of T₁ weighted contrast agents.

PRINCIPLES OF LAW

In establishing a case of obviousness based on a combination of prior art references, it can be important to identify a reason that would have prompted a person of ordinary skill in the art to combine the teachings of the prior art references. *KSR Int'l v. Teleflex Inc.*, 127 S.Ct.1727, 82 USPQ2d 1385 (2007).

ANALYSIS

Claim 24 does not require that the MRI method include generating image values indicative of renal perfusion. The disclosure in Stark that MRI may be used to generate images indicative of renal artery stenosis grade is sufficient to meet the limitations of the claims.

Claim 30, however, does recite generating image values indicative of renal perfusion. Neither Mistretta nor Stark discloses or suggests generating image values indicative of renal perfusion.

There is a reason to combine the teachings of Mistretta and Stark. Mistretta discloses that there are problems with the use of X-rays to image vasculature of the kidney and that MRI can be used to image human

vasculature. Stark discloses that MRI can be used to diagnose kidney stenosis grade. A person of ordinary skill in the art would have been motivated by the teaching in Stark that MRI may be used to diagnose kidney grade to use the MRI technique disclosed in Mistretta to diagnose kidney stenosis grade.

There is reason to combine the teachings of Mistretta and Stark with the teachings of Berg. A person of ordinary skill in the art would have been motivated by the teaching of Berg to use a contrast agent that contains superparamagnetic species in the MRI method disclosed in Mistretta to obtain the advantages taught by Berg i.e. to enable the particular organ or tissue to be visualized more clearly.

There is reason to combine the teachings of Mistretta and Stark with either Fischer or McMurray because each reference is evidence that the use of T₁ or T₂ weighted image was known in the art. A person of ordinary skill in the art would have been motivated to substitute one type of known weighted image for another type of known weighted image.

CONCLUSION/ORDER

The examiner's rejection of claims 24 to 29 and 31 to 33 is sustained.

The examiner's rejection of claim 30 is not sustained.

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No time period for taking any subsequent action in connection with this appeal may be extended under 37 C.F.R. § 1.136(a)(1)(iv)(2006).

AFFIRMED IN PART

jlb

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